CLAIMS

1. A method for treating a mammalian subject having a solid tumor *ex vivo*, comprising direct injection of a nucleic acid molecule encoding a B7-2 molecule in a form suitable for expression of the B7-2 molecule, into cells of the tumor, wherein the B7-2 molecule has the ability to costimulate a T cell and the ability to bind a CD28 or CTLA4 ligand, such that the growth of the tumor is inhibited.

2. A method for modifying cells of a solid tumor *ex vivo* to express a B7-2 molecule comprising, direct injection of a nucleic acid molecule encoding a B7-2 molecule in a form suitable for expression of the B7-2 molecule, into the tumor cells, wherein the B7-2 molecule has the ability to costimulate a T cell and the ability to bind a CD28 or CTLA4 ligand, such that B7-2 is expressed by the tumor cells.

3. A method of increasing the immunogenecity of a cells of a solid tumor *ex vivo* comprising, direct injection of a nucleic acid molecule encoding a B7-2 molecule in a form suitable for expression of the B7-2 molecule, into the tumor cells, wherein the B7-2 molecule has the ability to costimulate a T cell and the ability to bind a CD28 or CTLA4 ligand, such that B7-2 is expressed by the tumor cells, to thereby increase the immunogenicity of the tumor cells.

4. The method of any of claims 1-3, wherein the nucleic acid molecule encoding a B7-2 molecule comprises the nucleic sequence shown in SEQ ID NO:1.

5. The method of any of claims 1-3, wherein B7-2 comprises the amino acid sequence shown in SEQ ID NO:2.

6. The method of any of claims 1-3, wherein the nucleic acid molecule encoding B7-2 is in a viral vector.

7. The method of claim 6, wherein the viral vector is selected from the group consisting of a retroviral vector, an adenoviral vector, and an adeno-associated viral vector.

8. The method of any of claims 1-3, wherein the nucleic acid molecule encoding B7-2 is a plasmid expression vector.

9. The method of any of claims 1-3, wherein the tumor cells are further transfected with at least one nucleic acid molecule encoding a B7-3 protein.

10. The method of any of claims 1-3, wherein the tumor cells are further injected with at least one nucleic acid molecule encoding at least one MHC class II α chain protein and at least one MHC class II β chain protein in a form suitable for expression of the MHC class II α chain protein(s) and the MHC class II β chain protein(s).

11. The method of any of claims 1-3, wherein the tumor cells are further injected with at least one nucleic acid molecule encoding at least one MHC class I α chain protein in a form suitable for expression of the MHC class I protein(s).

12. The method of any of claims 1-3, wherein the tumor cells are further injected with a nucleic acid molecule encoding a β -2 microglobulin protein in a form suitable for expression of the β -2 microglobulin protein.

13. The method of any of claims 1-3, wherein expression of the MHC class II invariant chain is inhibited in the tumor cells by transfection of the tumor cells with a nucleic acid molecule which is antisense to a regulatory or a coding region of the invariant chain gene.

14. The method of any of claims 1-3 wherein the solid tumor is selected from a group consisting of a carcinoma, sarcoma, melanoma and neuroblastoma.